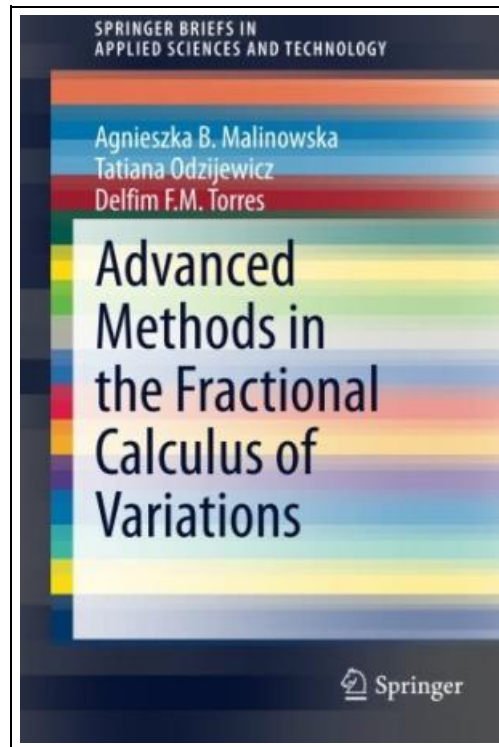# Advanced Methods in the Fractional Calculus of Variations



Filesize: 5.32 MB

## Reviews

This book is great. it was writtern quite flawlessly and helpful. You will not truly feel monotony at whenever you want of your time (that's what catalogs are for concerning if you ask me).
**(Sterling Kris)**

# ADVANCED METHODS IN THE FRACTIONAL CALCULUS OF VARIATIONS



To save **Advanced Methods in the Fractional Calculus of Variations** PDF, remember to follow the link under and download the file or have accessibility to other information which are highly relevant to ADVANCED METHODS IN THE FRACTIONAL CALCULUS OF VARIATIONS ebook.

Condition: New. Publisher/Verlag: Springer, Berlin | This brief presents a general unifying perspective on the fractional calculus. It brings together results of several recent approaches in generalizing the least action principle and the Euler-Lagrange equations to include fractional derivatives.The dependence of Lagrangians on generalized fractional operators as well as on classical derivatives is considered along with still more general problems in which integer-order integrals are replaced by fractional integrals. General theorems are obtained for several types of variational problems for which recent results developed in the literature can be obtained as special cases. In particular, the authors offer necessary optimality conditions of Euler-Lagrange type for the fundamental and isoperimetric problems, transversality conditions, and Noether symmetry theorems. The existence of solutions is demonstrated under Tonelli type conditions. The results are used to prove the existence of eigenvalues and corresponding orthogonal eigenfunctions of fractional Sturm-Liouville problems.Advanced Methods in the Fractional Calculus of Variations is a self-contained text which will be useful for graduate students wishing to learn about fractional-order systems. The detailed explanations will interest researchers with backgrounds in applied mathematics, control and optimization as well as in certain areas of physics and engineering. | 1. Introduction.- 2. Fractional Calculus.- 2.1. One-dimensional Fractional Calculus.- 2.2. Multidimensional Fractional Calculus.- 3. Fractional Calculus of Variations.- 3.1. Fractional Euler-Lagrange Equations.- 3.2. Fractional Embedding of Euler-Lagrange Equations.- 4. Standard Methods in Fractional Variational Calculus.- 4.1. Properties of Generalized Fractional Integrals.- 4.2. Fundamental Problem.- 4.3. Free Initial Boundary.- 4.4. Isoperimetric Problem.- 4.5. Noether&apos;s Theorem.- 4.6. Variational Calculus in Terms of a Generalized Integral.- 4.7. Generalized Variational Calculus of Several Variables.- 4.8. Conclusion.- 5. Direct Methods in Fractional Calculus of Variations.- 5.1. Existence of a Minimizer for a Generalized Functional.- 5.2. Necessary Optimality Condition for a Minimizer.- 5.3. Some Improvements.- 5.4. Conclusion.- 6. Application to the Sturm-Liouville Problem.-...

Read Advanced Methods in the Fractional Calculus of Variations Online
Download PDF Advanced Methods in the Fractional Calculus of Variations

## You May Also Like



**[PDF] Read Write Inc. Phonics: Yellow Set 5 Non-Fiction 1 in the Park**

Click the link under to download and read "Read Write Inc. Phonics: Yellow Set 5 Non-Fiction 1 in the Park" document.

Save Book »



**[PDF] Edge] the collection stacks of children's literature: Chunhyang Qiuyun 1.2 --- Children's Literature 2004(Chinese Edition)**

Click the link under to download and read "Edge] the collection stacks of children's literature: Chunhyang Qiuyun 1.2 --- Children's Literature 2004(Chinese Edition)" document.

Save Book »



**[PDF] Using Graphic Novels in the Classroom, Grades 4-8**

Click the link under to download and read "Using Graphic Novels in the Classroom, Grades 4-8" document.

Save Book »



**[PDF] Read Write Inc. Phonics: Orange Set 4 Non-Fiction 3 Up in the Air**

Click the link under to download and read "Read Write Inc. Phonics: Orange Set 4 Non-Fiction 3 Up in the Air" document.

Save Book »



**[PDF] Billy and Monsters New Neighbor Has a Secret The Fartastic Adventures of Billy and Monster Volume 4**

Click the link under to download and read "Billy and Monsters New Neighbor Has a Secret The Fartastic Adventures of Billy and Monster Volume 4" document.

Save Book »



**[PDF] Read Write Inc. Phonics: Yellow Set 5 Non-Fiction 5 a Mouse in the House**

Click the link under to download and read "Read Write Inc. Phonics: Yellow Set 5 Non-Fiction 5 a Mouse in the House" document.

Save Book »